

The Significance of Grain in the Development of the Tobacco Colonies

The economic development of the American colonies is one of the least explored areas in American economic history. Since the several regions in the colonies followed somewhat different paths of development, the colonial puzzle can be gradually pieced together through research which concentrates on particular regions. The subject of this study is an important aspect of the development of the tobacco colonies during approximately the thirty years preceding 1770. George Rogers Taylor and Jacob M. Price have suggested that the second and third quarters of the eighteenth century brought "rapid economic growth"¹ to the tobacco colonies and a "marked resumption of growth"² in tobacco exports. The findings of this study will suggest some reservations concerning the leading role of tobacco during this time. The series on American tobacco exports to Great Britain suggests that there was virtual stagnation in the first quarter of the eighteenth century followed by perhaps a doubling of exports in the second quarter and then near stagnation in the third quarter until the year 1771.³ The reason for the leap in tobacco exports in 1771 to a high plateau of approximately 100 million pounds annually during 1771-1775 is unknown. What is important for analysis of the growth and development of the tobacco colonies, however, is that the exceptionally high exports in the last five years of the colonial period tend to mask what was apparently a slow and erratic growth in world demand for American tobacco exports in the immediately preceding decades. The assumption that tobacco was a booming sector in the economy of the upper South at this time is open to question.

Between 1738-1742 and 1768-1772 the average annual rate of increase in American tobacco exports to Great Britain was approximately 1.6 percent, hardly a robust rate of expansion.⁴ Nevertheless, the average

I am grateful to the Ohio University Research Committee for the financial support which made it possible for me to complete this study. For helpful comments and suggestions made at various stages, I am indebted to Roger L. Ransom and Thomas D. Willett. For the use of microfilms of the Public Record Office material footnoted in this study, I am indebted to the rare manuscript collections of Alderman Library of the University of Virginia.

¹ George Rogers Taylor, "American Economic Growth Before 1840: An Exploratory Essay," *THE JOURNAL OF ECONOMIC HISTORY*, XXIV (Dec. 1964), 431.

² Jacob M. Price, "The Economic Growth of the Chesapeake and the European Market, 1697-1775," *THE JOURNAL OF ECONOMIC HISTORY*, XXIV (Dec. 1964), 497, 510.

³ U.S. Bureau of the Census, *Historical Statistics of the United States, Colonial Times to 1957* (Washington, D.C., 1960), p. 766.

⁴ Admittedly, the selection of different end-points might yield a different estimated growth rate. For example, 1721-1725 to 1771-1775 comparisons indicate a growth rate of about 2.2 percent. However, these end-points tend to maximize the rate of growth of tobacco exports. An approach to estimating growth rates which is relatively

annual exports in the 1768-1772 period of about 84 million pounds exceeded the exports of any previous consecutive five-year period in the eighteenth century, and only the single years of 1753, 1760, and 1763 had exports in excess of this five-year average.⁵ In contrast to the growth in tobacco exports, the average annual rate of increase in the population of Virginia, the colony which produced about two thirds of American tobacco exports, was approximately 3.1 percent between 1740 and 1770. The wide disparity between the rate of increase in physical tobacco output and in the population suggests that a growing fraction of the population may have been employed in areas other than tobacco production or that tobacco output was operating under conditions of sharply decreasing returns to labor over time. A third alternative, that of unemployment, will be rejected out of hand.

The focus of this study is on the economic development of the colony of Virginia⁶ during the late colonial period. Quantitative evidence is presented which sets Virginia in perspective as an important grain producer, and the thesis is advanced that it was the production and export of grain, not tobacco, which was the dynamic element in the economy during this time. A vigorous expansion in the grain sector helped to sustain economic growth in the presence of conditions of comparative lassitude in the tobacco sector.

I

The exceptional importance of tobacco to the Virginia economy has been appropriately stressed in most of the literature dealing with the colonial economy. Less well known is the fact that Virginia was also an important producer of Indian corn and wheat by the end of the colonial period. Although not as important a producer of wheat⁷ for export as either Pennsylvania or New York, Virginia was not far behind the latter. When flour is converted to a wheat equivalent⁷ and added to wheat

unbiased by the selection of end-points is to estimate a least-squares regression equation reflecting the relationship $E_t = E_1 (1 + r)^t$ where E_t denotes exports in time t , E_1 denotes exports in some initial time period, t is elapsed time in years, and r is the rate of growth. When this is calculated for the 1721-1775 period, the result is approximately 1.8 percent, which is substantially less than the 2.2 percent that the end-point to end-point method yields. For the 1738-1772 period, the regression estimate is about 1.5 percent, which is reasonably consistent with the 1.6 percent generated by the end-point technique. This suggests that the choice of end-points employed in this study, which was constrained by data limitations, imparts little bias to growth estimates for the interval 1738-1772.

⁵ *Historical Statistics of the United States*, p. 766.

⁶ The economy of Virginia warrants scrutiny if only because so many of the colonists lived there. In 1770 approximately 20 percent of the total American population lived in Virginia. The population of Virginia equaled that of Pennsylvania and New York combined, and it exceeded that of New England without Connecticut. Even when the large Negro population of Virginia is excluded, the population surpassed that of any other colony. If it is appropriate to lump Maryland with Virginia for purposes of economic analysis, the two tobacco colonies contained about 30 percent of the total colonial population. *Historical Statistics of the United States*, p. 756.

⁷ Based on $4\frac{1}{2}$ bushels of wheat being equivalent to 196 pounds of flour. Percy W. Bidwell and John I. Falconer, *History of Agriculture in the Northern United States, 1620-1860* (New York: Peter Smith, 1941), p. 498.

exports, the average annual net wheat exports of Pennsylvania were approximately 1.5 million bushels during the years 1768-1772. The colony of New York had average wheat exports of about 530,000 bushels per year.⁸ In the same period, the average annual wheat exports of Virginia amounted to approximately 403,000 bushels. With respect to corn, Virginia was by far the leading exporter. Average annual exports of corn were nearly 567,000 bushels compared to about 150,000 bushels for Pennsylvania and New York combined.⁹

It is difficult to determine the beginning of grain production as a market crop in the Tidewater. One scholar believes that it began on the Eastern Shore as early as 1720-1730.¹⁰ Another believes that wheat growing in Virginia developed largely since 1750.¹¹ L. C. Gray lists two reasons why wheat farming was slow to develop in Virginia until late in the colonial period.¹² The first was that the climate and soils of the coastal plain were less adapted to wheat farming than the metamorphic soils and cooler climates of the interior Piedmont areas. A more general reason was that wheat was inferior to corn as a pioneer crop since it was more expensive to produce than corn. The land must be more fully cleared, it is more difficult to harvest, the yield is smaller, and a larger proportion of the crop is needed for seed. It seems likely that the surplus of wheat for export resulted from the increased settlement in the Piedmont region of Virginia beginning roughly in the middle third of the eighteenth century and that the surplus continued to expand with the density of that settlement throughout the remainder of the colonial era. The production of corn for market had earlier origins and was a ubiquitous crop with significant surpluses in many parts of the colony.

There is scattered qualitative evidence which indicates that there may have occurred a relative shift from tobacco to grain production by the middle of the eighteenth century. A few samples of such evidence can be mentioned. An English visitor remarked in 1736 that the planters "in great numbers have turned themselves to the raising of grain and livestock, of which they now begin to send great quantities to the West Indies."¹³ In 1765 the tendency to switch to grain in eastern Virginia prompted the editor of a Georgia newspaper to write, "We also hear that the inhabitants of that colony intent [sic] to give over the culture of tobacco, as it greatly impoverishes their land, and to introduce a species of agriculture that will be a more general utility, and better adapted to their

⁸ Max George Schumacher, "The Northern Farmer and his Markets during the Late Colonial Period" (unpublished Ph.D. dissertation, University of California, 1948), p. 154. Net exports refer to the excess of exports over any imports.

⁹ Public Record Office, London, Customs 16/1 and Schumacher, "Northern Farmer," p. 154.

¹⁰ Lewis Cecil Gray, *History of Agriculture in the Southern United States to 1860* (New York: Peter Smith, 1941), I, 167.

¹¹ Virginia D. Harrington, *The New York Merchant on the Eve of the Revolution* (New York: Columbia University Press, 1935), p. 208.

¹² Gray, *History of Agriculture*, p. 161.

¹³ *Ibid.*, p. 167.

soil.”¹⁴ David MacPherson stated that the quantity of tobacco in Virginia was “diminishing” prior to the Revolution and that the farmers were switching to grains. He gave the reason as soil exhaustion.¹⁵ Fortunately, one can attempt to check such descriptive accounts as the foregoing against the information contained in the Virginia Naval Office Lists and in Customs 16/1.¹⁶ Once the growth of the grain trade is quantified, it is possible to compare it with the growth of tobacco exports and of population with a view to reaching some tentative conclusions concerning the economic development of the tobacco colonies.

II

It was suggested that a comparison of the growth of population and of tobacco exports leads one to surmise that a growing percentage of the population of Virginia may have been occupied in grain farming during the late colonial period. It would be important to know if this were true because the growth of tobacco exports during much of the late colonial period was not indicative of a flourishing economy. Average annual American tobacco imports by Great Britain increased from about 52 million pounds in 1738-1742 to about 84 million pounds in 1768-1772. This amounts to an estimated increase in exports for Virginia of about 1.6 times.¹⁷ Over this same period the population of Virginia grew from about 180,500 persons in 1740 to about 447,000 persons in 1770, or by 2.5 times.¹⁸ If one speculates that the second and third quarters of the eighteenth century brought rapid growth to the tobacco colonies, one should inspect other sectors besides tobacco to test this hypothesis.

Table 1 provides information on total average annual grain exports by Virginia in 1737-1742 and in 1768-1772. The coastwise exports shown in that table consist of exports to Massachusetts, New York, Pennsylvania, Rhode Island, New Hampshire, and Bermuda. The exports of

¹⁴ *Ibid.*

¹⁵ David MacPherson, *Annals of Commerce* (Edinburgh: Mundell and Son, 1805), III, 569.

¹⁶ The average annual grain exports of Virginia for the 5 years of 1768-1772 were computed from Public Record Office, London, Customs 16/1, entitled the *Ledger of Imports and Exports for America, 1768-72*. This document gives the trade of the colonies with all parts of the world but is limited to the 5 years cited. The calculation of the average annual grain exports of Virginia for the 6 years 1737-1742 was from Public Record Office, London, C.O. 5/1443, C.O. 5/1444, C.O. 5/1445, C.O. 5/1446. Over this period there are no gaps in the naval lists for five of the six naval districts of Virginia. For the sixth district, Accomac, the years used in computing average annuals was the period 1731 through 1734. The alternative to using this 4-year period was to jump to 1746 and beyond, a much later period and therefore less useful for the purpose at hand. Prior to 1737 the gaps in the Virginia naval lists are very frequent, and the information they yield is often severely curtailed.

¹⁷ *Historical Statistics of the United States*, p. 766. The share of Virginia in American tobacco exports probably remained fairly constant over the interval between the two periods at about two thirds of the total. See, for example, the discussion of Table Z230-237 in *Ibid.*, p. 749.

¹⁸ *Ibid.*, p. 756.

grain to southern Europe and the Wine Islands were sent most frequently to Madeira, but there were also occasional large shipments to Lisbon and Cadiz. The exports to the West Indies were sent mainly to Barbados, Jamaica, and Antigua. Average annual corn exports increased from 122,433 bushels to 566,672 bushels, or by about 4.6 times. Average annual wheat exports, including flour and bread converted to a wheat equivalent, increased from 36,199 bushels to 403,328 bushels or by about 11 times.

TABLE 1
AVERAGE ANNUAL GRAIN EXPORTS BY VIRGINIA IN
1737-42 AND 1768-72

Destination	Corn		Wheat		Bread and Flour	
	1737-42	1768-72	1737-42	1768-72	1737-42	1768-72
	(bushels)		(bushels)		(tons)	
Great Britain	0	0 ^a	0	22,139	0	139
Ireland ^b	0	3,340	0	14,505	0	195
Southern Europe and the Wine Islands	6,457	78,498	25,204	149,282	5	851
West Indies	35,755	319,800	0	0	10	1,406
Coastwise	80,221	165,034	10,224	68,291	0	300
Totals	122,433	566,672	35,428	254,217	15	2,901 ^c

^a Excludes 76,599 bushels shipped in 1768.

^b Ireland is a 4-year average, 1768-1771.

^c A rough equivalent for converting tons of bread and flour to bushels of wheat is 1 ton of bread and flour equals 51.4 bushels of wheat.

Source: The 1768-72 data are computed from Public Record Office, London, Customs 16/1. The 1737-42 data are from the Virginia naval lists for that period: P.R.O., C.O. 5/1443, C.O. 5/1444, C.O. 5/1445, and C.O. 5/1446.

The fast growth of grain exports led to a pronounced change in the relative importance of tobacco and grain as export-earners in the Virginia economy. The average annual value of Virginia tobacco exports increased from an estimated £165,000 in 1738-1742 to an estimated £476,000 in 1768-1772.¹⁹ Over the same interval, the average annual value of grain exports increased from about £11,500 to about £130,000.²⁰ In the

¹⁹ The price used for valuing tobacco exports was 9.5 shillings in 1738-1742 and 17 shillings in 1768-1772. Arthur H. Cole, *Wholesale Commodity Prices in the United States, 1700-1861* (Cambridge: Harvard University Press, 1938). The monthly averages were converted to annual averages and then to a weighted 5-year average. The current Philadelphia prices were then deflated to sterling at a rate of exchange of £167 Pennsylvania currency for £100 sterling. Anne Bezanson, Robert D. Gray, and Miriam Hussey, *Prices in Colonial Pennsylvania* (Philadelphia: University of Pennsylvania Press, 1935), chap. XIII.

²⁰ The 1737-1742 prices are from Cole deflated to British sterling: 1.25 shillings per bushel of corn; 2.12 shillings per bushel of wheat. The negligible flour exports in 1737-1742 were converted to wheat and valued as wheat. The 1768-1772 prices are from James F. Shepherd, Jr., "A Balance of Payments for the Thirteen Colonies" (unpublished Ph. D. dissertation, University of Washington, 1966): 1.54 shillings per bushel of corn; 3.8 shillings per bushel of wheat; 13 shillings per cwt. of flour.

earlier period, the ratio of the average annual value of tobacco to grain exports was roughly 14:1. Approximately 30 years later, however, this ratio had fallen to less than 4:1. Another way of viewing the relative advance of the grain export sector is through per capita export figures. When explicit account of the population growth is allowed for, the average annual value of per capita tobacco exports expanded from about 18.3 shillings to about 21.3 shillings. In contrast, per capita grain exports increased from about 1.3 shillings to about 5.8 shillings. For Virginia in 1768-1772, the per capita income directly attributable to tobacco and grain exports was approximately £1.4 annually.²¹

The ratio of the value of tobacco exports to grain exports is only a partial measure of the relative economic importance of tobacco and grain to the Virginia economy, however. A clearer picture could be revealed if one knew something about the relative values of tobacco and grain production. Unlike tobacco, most of the grain crop was consumed internally and not exported. It is possible to develop some crude estimates of what Virginia grain production might have been by relying on estimates of annual per capita consumption and on population data. Exports can be added to the product of per capita consumption and population to obtain a figure for total production. It is unfortunate that there are no reliable figures available for per capita grain consumption during the colonial period. The tentative estimates employed in this study are 4.3 bushels of wheat and 11 bushels of corn per capita.²² On this basis, the total average annual production of wheat in 1768-1772 would have been about

²¹ In his dissertation, James F. Shepherd, Jr., estimated that the average annual per capita income in the thirteen colonies which was directly attributable to overseas commodity trade was £1.5 during 1768-1772. He estimated that slightly more than £1 could be added to this figure to account for per capita income derived from the carrying trade. See page 8 of that study.

²² The per capita wheat consumption figure is that used by Towne and Rasmussen for the 1800-1830 period in their study of gross farm product in the nineteenth century. *Trends in the American Economy in the Nineteenth Century*, Studies in Income and Wealth, National Bureau of Economic Research, Vol. 24 (Princeton: Princeton University Press, 1960), p. 294. Applying estimates of per capita corn consumption to the colonial period is even more hazardous. Towne and Rasmussen estimate human per capita corn consumption in 1800-1840 at 4.4 bushels yearly. See page 297 of their article. In 1839 average per capita consumption of corn by both humans and animals was approximately 22 bushels. *Exports Domestic and Foreign, 1697 to 1789 Inclusive*, 48th Cong., 1st Sess., House Misc. Doc. 49, Part 2 (Washington, D.C., 1884), p. 21; *Historical Statistics of the United States*, p. 297. It has also been estimated that slaves in Virginia not fed animal food consumed 15 bushels of corn annually. Kate Mason Rowland, "Merchants and Mills," *William and Mary Quarterly*, 1st ser., Vol. XI (Jan. 1903), 245-46. It seems unlikely that the practice of feeding corn to animals was as important in 1770 as it was in the first half of the nineteenth century, when the ratio of total corn consumption to human corn consumption was roughly 5:1. If this ratio were only one half as great in 1770, total per capita corn consumption could have been 11 bushels yearly. This figure would be on the low side if human corn consumption was greater in 1770 than in the later period. Corn was an important food crop in the colonial period in Virginia, especially among the numerous small planters and among the slaves. Needless to say, the per capita grain consumption figures selected are at best a crude approximation to the correct ones.

2,325,000 bushels worth roughly £442,000 when valued at the market price. Corn production would have amounted to about 5,484,000 bushels worth an estimated £422,000. The combined value of the corn and wheat crop when valued at the prevailing market prices would have been approximately £864,000.²³ L. C. Gray estimated per capita tobacco consumption in the 1830-1850 period at 4.23 pounds annually.²⁴ Adding consumption to exports yields an estimate for average annual tobacco production in 1768-1772 of about 58 million pounds worth an estimated £493,000. Incidentally, this would mean that only about 3.3 percent of the tobacco crop of Virginia was consumed within the colony.

III

Since nearly all the tobacco produced in Virginia was exported, the growth of tobacco exports can serve as a proxy for the actual increase in tobacco production. The results show that real output of tobacco per capita declined significantly between 1738-1742 and 1768-1772. The decline in average annual physical per capita output was from approximately 192 pounds to approximately 125 pounds. This diminished output per capita amounted to a decline of about 35 percent from the level of output per capita attained in the 1738-1742 period. This phenomenon deserves attention, for it has potentially important implications affecting economic growth in Virginia during this period.

There seem to be two general approaches to an explanation of this decline in real output per capita. One is that productivity was falling in the tobacco sector so that the constant proportion of the expanding population engaged in tobacco production was experiencing decreasing returns to labor over time. The other is that productivity did not decline but that the proportion of the expanding population engaged in tobacco production was decreasing over time. The reduced real output per capita could, of course, involve elements of both explanations. The declining productivity interpretation would necessarily imply an adverse effect on real per capita economic growth; the explanation that there was a relative shift of resources away from tobacco production would not.

Toward the end of the colonial period, there is considerable qualitative evidence that tobacco farms in the older regions of Virginia were becoming too infertile for efficient production of tobacco.²⁵ Soil exhaustion would be the most likely real-world counterpart of the declining produc-

²³ There is, of course, a serious theoretical problem in valuing grain consumption at the market price at which the grain exports were sold. It is not worth speculating on how the increased supply for sale would have depressed the market price, however. The fact is that most of the grain crop had to be consumed and could not have been sold. At the margin, if the alternative to consuming grain was to sell it, then perhaps the foregone alternative value of the grain consumed (the market price) is a rough approximation of the value of the grain to those who consumed it.

²⁴ Gray, *History of Agriculture*, II, 753.

²⁵ One good study dealing with this theme is that by Avery Odell Craven, "Soil Exhaustion as a Factor in the Agricultural History of Virginia and Maryland, 1606-1860," *University of Illinois Studies in the Social Sciences*, XII (Mar. 1925), 25-71 (esp. 65-69).

tivity explanation. If the labor and capital resources employed on soil-exhausted tobacco farms did not shift to more remunerative pursuits or if they shifted too slowly, the effect would be to reduce real per capita tobacco output. Unless there existed alternative opportunities for more profitably employing resources outside of the tobacco sector, the proportion of the tobacco crop planted on low-productivity soils would have tended to rise. Unless the fraction of the population engaged in tobacco farming increased sufficiently to offset this decline in average output per acre, the result would be the observed fall in output per capita. It should be noted, however, that there is qualitative evidence that the planters were continually moving to fresh soils when their tobacco lands became depleted. This did not always mean moving their residence but only planting different acres on the same farm; this was especially true for the large planters.²⁶ In addition, it was during this period that tobacco culture was expanding in central Virginia and on the lands south of the James River. Thus the mere existence of lands exhausted by tobacco would not necessarily mean that much of the current tobacco crop was planted on such soils. The question is, did infertility account for the approximately 35 percent decline in output per capita by depressing output per worker in tobacco? If it did, the implications for economic growth in the tobacco colonies during this period are grim.

A more optimistic explanation for the fall in tobacco output per capita, and one more in consonance with the production and export data for grain, is that there occurred a relative shifting of resources away from tobacco production. As the economy at this time was almost entirely an agrarian one, the chief alternative to planting tobacco was to grow foodstuffs. Most of the tobacco plantations were nearly self-sufficient in food and provided their own corn, wheat, flour, meat, and vegetables. The surpluses were generally sold in the market and exported. If the rough estimates of grain production in the 1768-1772 period are accepted, then approximately 10.3 percent of the corn crop and 17.3 percent of the wheat crop were exported. These are sizable surpluses which occurred despite the need to feed a population which was also growing rapidly. Unlike the case for tobacco, the growth of grain exports is probably not a good proxy for the growth of grain production, since a relatively small fraction of the grain crop was exported. The size of the grain exports indicate, however, that they were more than accidental residuals above consumption demands. Clearly, substantial production for the market was occurring. It is probably true that the growth of grain production was at least as fast as the growth of population. Given the small grain surplus in 1737-1742, such growth would have been required just to maintain food consumption at its former level. There is no known reason to suspect that per capita consumption of corn and wheat would have declined during this period. In the 1768-1772 period, the surplus of corn and wheat amounted to nearly a million bushels annually; thus the growth

²⁶ Thomas J. Wertenbaker, *The Planters of Colonial Virginia* (Princeton: Princeton University Press, 1922), p. 105.

in grain production exceeded the growth in grain consumption. If grain consumption were a linear function of the population size, total grain production experienced a faster growth than population. This would mean that per capita grain output increased during this time.

A higher per capita output of grain could have been caused by an increase in the fraction of the population employed in grain production or by rising productivity in the grain sector. There is little evidence to support the rising productivity explanation, however. Grain output per person probably did not increase much in this period, since farming techniques and technology did not change. There were no significant improvements either in tilling the soil or in harvesting the grain. Some increase in output per acre may have occurred, resulting from settlers moving to soils better suited to the growing of wheat. Offsetting this to some extent would be the increased grain production which arose on land abandoned by tobacco farmers in the Tidewater region. This last would increase total grain output, especially of corn, but probably would not have increased output per acre.

The relative prices of tobacco and grain have been ignored thus far although this influence could have been an important one. Higher relative tobacco prices would tend to prevent resources shifting from tobacco to grain even if productivity were falling in the tobacco sector. One could theoretically offset the other so that the marginal revenue product in tobacco farming between two periods would remain unchanged. On the other hand, resources shifting to grain from tobacco due to declining productivity in tobacco production would be intensified if the price of grain were increasing relative to the price of tobacco. There is every reason to believe that the colonists were profit-maximizers. The price data on corn, wheat, flour, and tobacco over the relevant period indicate that, on the whole, grain prices rose slightly relative to tobacco prices.²⁷ A useful tool is a comparison of annual prices of tobacco with those of flour, over time. There was a very close relationship between the prices of flour and wheat. In the decade of the 1730's, 50 to 70 pounds of tobacco were required in barter for a hundredweight of flour. In each of the next three decades there were successive declines in the relative value of tobacco. In the 1740's, between 60 and 65 pounds of tobacco usually exchanged for a hundredweight of flour. In the 1750's, the exchange ratio had risen to 65 to 70 pounds of tobacco for a hundredweight of flour. In the 1760's, between 70 and 80 pounds of tobacco were required to purchase 112 pounds of flour. In the years 1768-1772, when tobacco had increased substantially in price, 54 to 62 pounds were sufficient.²⁸

It would be interesting to know the trend of slave prices relative to tobacco prices during this period. Higher slave prices could have con-

²⁷ Bezanson, Gray, and Hussey, *Prices in Pennsylvania*, pp. 9-66, 79-84. This is a series on all four items which covers the entire period under study. The prices are for Philadelphia and would probably be close to those prevailing in Virginia. There are no comparable price data for Virginia available. Corn prices may not have advanced as rapidly as tobacco prices.

²⁸ *Ibid.*, p.84.

tributed to a relative shift of resources from tobacco to grain production since tobacco was a more labor-intensive crop than was grain. The adverse effect of higher slave costs on profit margins would have been felt relatively more in the tobacco sector. It seems likely that the supply of slaves was fairly elastic, since they could be imported freely. Under these conditions a rise in slave prices would have tended to signal increased slave imports until the rise in prices was arrested. Scattered quotations found in Gray, however, indicate that slave prices may have more than doubled in the period 1700-1775, perhaps increasing by 50 percent in the third quarter of the century.²⁹ The data are very unreliable, however, and it is not known whether slave prices rose relative to tobacco prices during this time.

The evidence weighs in favor of the explanation that ascribes the decline in real per capita tobacco output to a fall in the percentage of total man-hours employed in the tobacco sector. Given the opening of new tobacco lands, it seems doubtful that the 35 percent decline was caused wholly by a fall in the average yield per acre planted in tobacco. Since the chief alternative to growing tobacco was to produce foodstuffs, and since output per capita in grain farming appears to have risen, it seems probable that there occurred a relative shift of resources away from tobacco and toward grain. This explanation is reinforced by the fact that productivity increases in grain farming during this period were negligible and thus the increased output in grain farming must have been due to an increase in the proportion of total man-hours spent in that sector. The relative trend of tobacco and grain prices and the fragmentary data on slave prices would tend to support this conclusion.

IV

The economy of the upper South at this time appears to have grown rapidly despite the lagging tobacco sector. The expanding real income of this region is indicated by the fact that the demand for imports from England by Virginia and Maryland increased by about 2.7 times between 1738-1742 and 1768-1772.³⁰ The tobacco colonies were a major surplus food region at a time when their population was expanding rapidly and when the bulk of their resources were committed to tobacco. The rising world demand for food at this time was of great significance to the development of the American colonies, and in the upper South it bolstered an economy coping with a slow and uneven growth in demand for its staple. While it seems clear that real income was growing rapidly, it is doubtful that per capita income increased by much.³¹ Improvements in productivity in farming simply did not permit a substantial increase in the living standards of the vast majority of the people. The aim of this

²⁹ Gray, *History of Agriculture*, I, 369.

³⁰ *Historical Statistics of the United States*, p. 757.

³¹ George Rogers Taylor has speculated that between 1710 and 1775 the average annual rate of increase of real per capita income in the American colonies was about 1 percent ("American Economic Growth," p. 429).

study has been to analyze the role played by grain in the development of the tobacco colonies in the late colonial period. Over the period studied, per capita income resulting from tobacco and grain exports together increased by about 38 percent over the level attained in 1738-1742. Of this increase, more than half was due to the growth in grain exports. The grain sector not only was vital as a basis for feeding a rapidly growing population but also served at the margin as an increasingly important source of export earnings.

DAVID KLINGAMAN, *Ohio University*